No. 9400113

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Goertzen Seed Research

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR PRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE R[illegible] STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*SOFT RED WINTER WHEAT*

*'GSR 2500'*

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of August in the year of our Lord one thousand nine hundred and ninety-five.*

*Attest:*

*Acting Commissioner*
*Plant Variety Protection Office*
*Agricultural Marketing Service*

*Secretary of Agriculture*

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #0581-0055), Washington, 20250. FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

*(Instructions on reverse)*

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*: Goertzen Seed Research
2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.: G2500
3. VARIETY NAME: GSR 2500
4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*: P.O. Box 419, Haven, Ks. 67543
5. PHONE *(Include area code)*: 316-465-7792

**FOR OFFICIAL USE ONLY**

PVPO NUMBER: 9400113

FILING — Date: Feb. 28, 1994 — Time: ☐ A.M. ☐ P.M.

FEES RECEIVED — Filing and Examination Fee: $2325.00 — Date: Feb. 28, 1994 — Certificate Fee: $~~175.00~~ $125.00 — Date: 06/26/95 & 07/31/95

6. GENUS AND SPECIES NAME: Triticum aestivum
7. FAMILY NAME *(Botanical)*: Gramineae
8. CROP KIND NAME *(Common Name)*: Common Soft Red Winter Wheat
9. DATE OF DETERMINATION: July 8, 1991
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*: Goertzen Seed Research - corporation
11. IF INCORPORATED, GIVE STATE OF INCORPORATION: a wholly owned subsidiary of Cargill, Inc. Delaware
12. DATE OF INCORPORATION: Oct. 2, 1991
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
Kenneth & Betty Goertzen, wheat breeders
6 Stadium Dr.
Haven, Ks. 67543
PHONE *(Include area code)*: 316-465-7744

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*
- a. ☒ Exhibit A, Origin and Breeding History of the Variety.
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety.
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 12/22/93
- g. ☒ Filing and Examination Fee ($~~2,150~~ 2325) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)* ☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____ .)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates) Fall 1993 seed increase
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

| SIGNATURE OF APPLICANT *(Owner(s))* | CAPACITY OR TITLE | DATE |
|---|---|---|
| Kenneth L. Goertzen | wheat breeder | 2/21/94 |
| SIGNATURE OF APPLICANT *(Owner(s))* | CAPACITY OR TITLE | DATE |
| Betty Lenning Goertzen | wheat breeder | 2/21/94 |

**Exhibit A Origin and Breeding History of GSR 2500**

**In 1984 several populations of wheat from Eastern Europe were supplied to us.**

**One population (ZG4287 x Od. 51) appeared to have segregates that were particularly productive and disease free in Kansas. Single plants were selected. In 1991 small increases were started on two of these selections. In 1992 these two selections growing side by side showed a distinct difference in the amount of yellowing caused by barley yellow dwarf mosaic virus. The most resistant line we designated as GSR 2500.**

**GSR 2500 is a selection from a selection and has been observed to be uniform and stable since the selection was made in 1991.**

**Breeders seed is to be maintained as a pure line by isolation, roguing, and careful cleaning of equipment by Goertzen Seed Research.**

**The other certified levels of GSR 2500 seed will be produced by certifying agency standards.**

**Exhibit B Novelty Statement of GSR 2500**

**The most similar variety to GSR 2500 is Haven. They are similar in chaff color, height, awns, seed shape, winter hardiness, use of grain, and high molecular weight gluten subunits.**

**They differ as follows:**

| GSR2500 | Haven |
|---|---|
| seed texture -soft | seed texture - hard |
| oblong head | tapering head |

**GSR 2500 and Compact are both soft red winter wheats, but they are different in their electrophoretic patterns. The high molecular weight glutenin subunits of GSR 2500 are 1, 5+10, 7+8. The high molecular weight glutenin subunits of Compact are 1, 5+10, 7 +9. An attached sheet (H) shows a copy of an electrophoretic gel which includes the variety Compact and GSR 2500. The sheets which follow this copy of the gel show comparisons of GSR 2500 and Compact. Both GSR 2500 and Compact appear to be homozygous for their high molecular weight glutenin subunits.**

**Seed physical characteristic of GSR 2500 and Compact are compared on an attached sheet.**

EXHIBIT C
GSR 2500

(4)

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
~~LIVESTOCK AND SEED DIVISION~~
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

# OBJECTIVE DESCRIPTION OF VARIETY
## WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): Goertzen Seed Research

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
P.O. Box 419
Haven, Kansas 67543

FOR OFFICIAL USE ONLY
PVPO NUMBER: 9400113
VARIETY NAME OR TEMPORARY DESIGNATION: GSR 2500

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____
[1] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][1][0] FIRST FLOWERING
[2][1][7] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[ ][1] NO. OF DAYS *EARLIER* THAN .....
[ ][4] NO. OF DAYS *LATER* THAN .....
[2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[7] 4 = LEMHI 5 = NUGAINES 6 = LEEDS
7 = Plainsman V

5. PLANT HEIGHT (*From soil level to top of head*):
[ ][8][9] CM. HIGH
[ ][ ] CM. TALLER THAN .....
[2][5] CM. SHORTER THAN .....
[ ]
[2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = dark GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[ ][4] NO. OF NODES (*Originating from node above ground*)
[2][0] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][3] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2][3] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79), which may be used)

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11. HEAD:

[2] Density: 1 = LAX 2 = DENSE (Mid)

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) oblong

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[5] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0 9] CM. LENGTH

[1 0] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[3] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Check: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[5] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[8] MM. LENGTH

[3] MM. WIDTH

[3 7] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] STEM RUST (Races) _____

[2] LEAF RUST (Races) _____

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) Soil borne / spindle streak

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|---|---|---|---|
| Plant tillering | Haven | Seed size | Haven |
| Leaf size | KS2163 | Seed shape | Haven |
| Leaf color | Haven | Coleoptile elongation | Discovery |
| Leaf carriage | KS2163 | Seedling pigmentation | Haven |

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States. Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

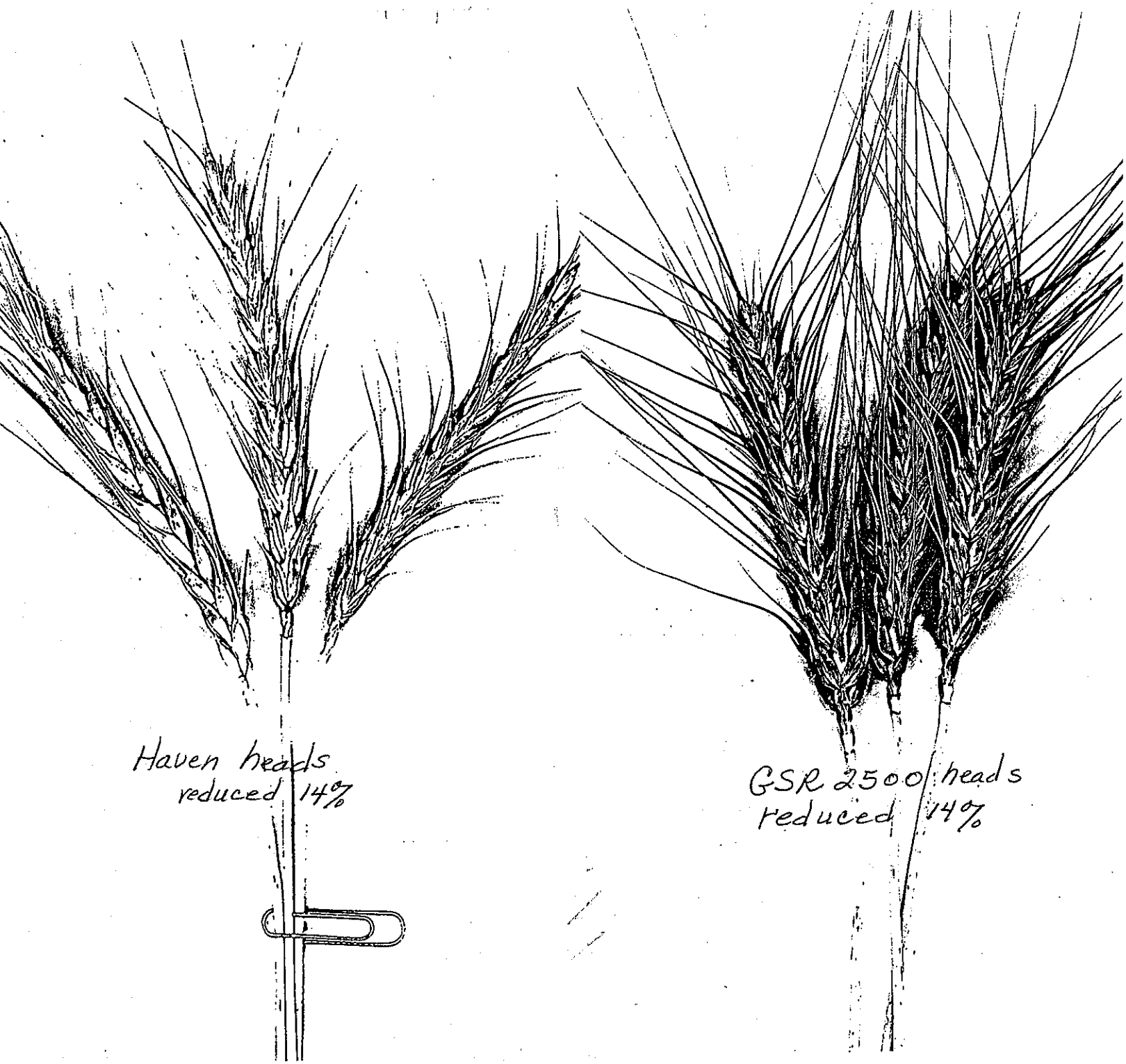
EXHIBIT D: ADDITIONAL DESCRIPTION OF GSR 2500

GSR 2500 is a semi dwarf soft red winter wheat with good bread quality. The flag leaf is held erect at booting stage. The spike is awned, mid long and mid wide with oblong shape. It has a medium dense head with brown chaff color. At maturity the spike is held in an inclined position. The glumes of GSR 2500 are long and wide. The seed shape is ovate with a narrow crease and short medium size brush. The germ is large.

EXHIBIT E STATEMENT AND BASIS OF APPLICANTS OWNERSHIP OF GSR 2500

In 1984 several populations of wheat from Eastern Europe were supplied Goertzen Seed Research. One population had segregates that looked productive in Kansas. One of the single plant selections made by wheat breeders Kenneth & Betty Goertzen became designated as GSR 2500 and was increased from this single plant selection and tested by them. This selection was then increased as breeders seed and shows less than 1 per 1000 variants 3½ inches taller. Breeders seed is being maintained by Goertzen Seed Research and certified seed , as well as foundation and registered seed, will be produced under the requirements of state certifying agencies.

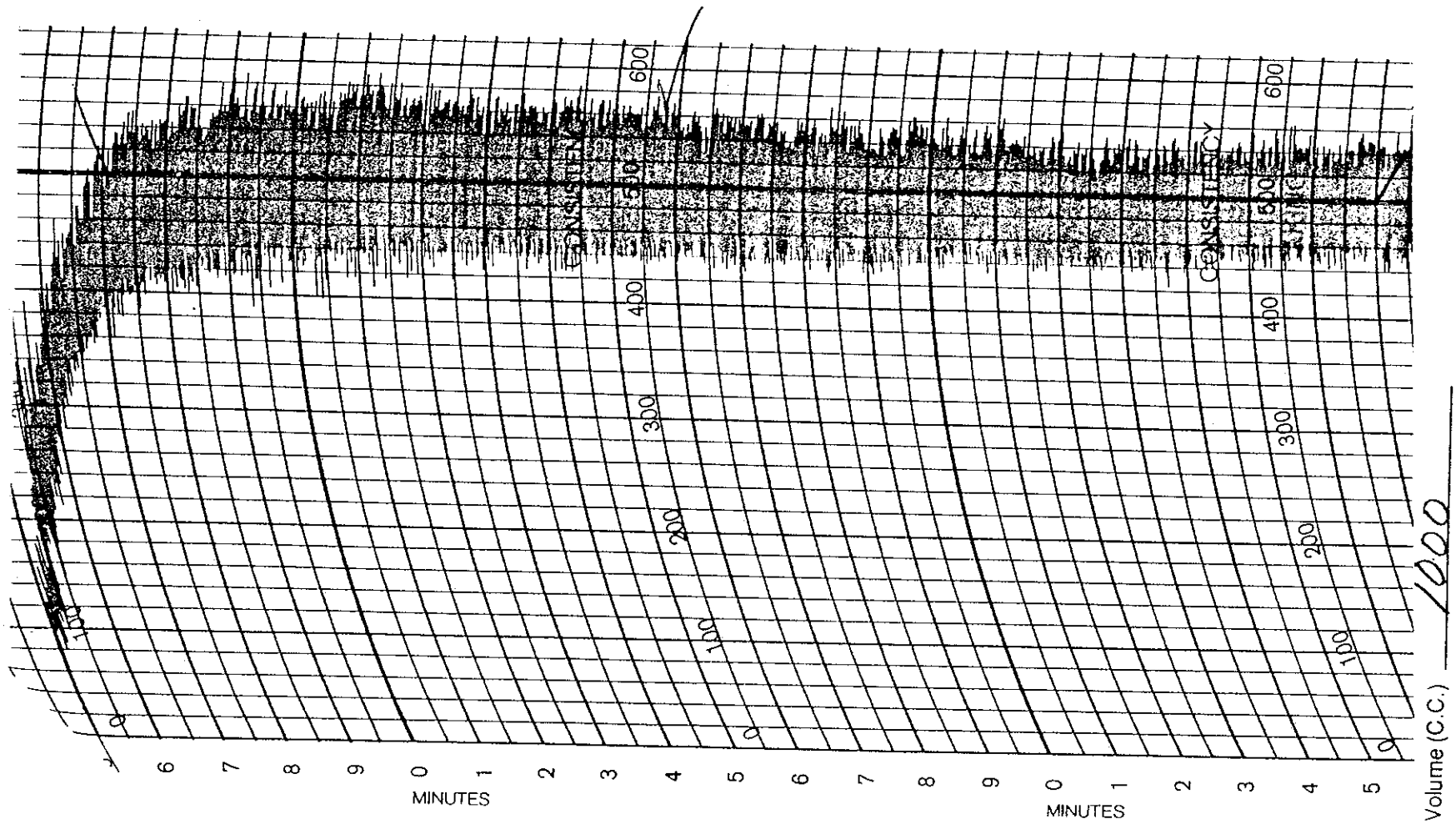
When Cargill Inc. bought Goertzen Seed Research January 24, 1994 GSR 2500 was a part of the Goertzen Seed Research assets.


Haven heads
reduced 14%
GSR 2500 heads
reduced 14%

C. W. BRABENDER INSTRUMENTS, INC. SOUTH HACKENSACK, N.J. U.S.A.

FARINO-PLASTO-

G2500

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GSR2500
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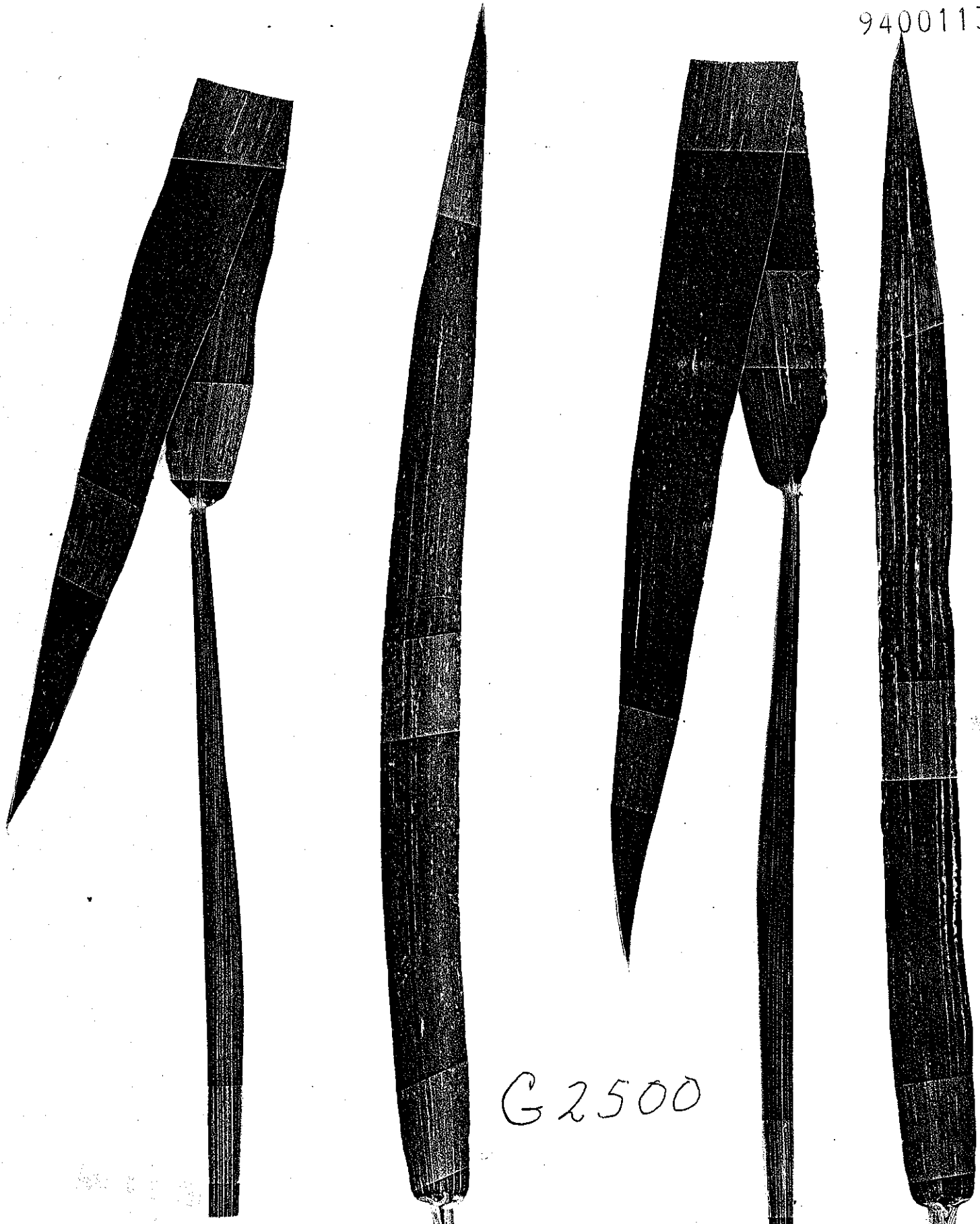
| | (1-5) Lodging | cm. ht. | (1-5) Winter Hardiness | leaf rust | (1-5) BYD yellowing | full bloom | Brown Chaff | % Protein |
|---|---|---|---|---|---|---|---|---|
| Haven | 5 | 93.75 | 4.5 | 4.0 | 4 | 5/3 | ✓ | 15.9 |
| Pl.V | 4 | 91.25 | 4 | 4.0 | 4.5 | 5/1 | ✓ | 17.0 |
| Newton | 3 | 97.5 | 3.75 | 3 | 2 | 5/6 | | 11.0 |
| Karl | 3 | 95 | 4.5 | 4.0 | 4 | 5/2 | | 14.5 |
| Voyager | 5 | 102.5 | 5 | 4.5 | 2.5 | 5/3 | | 14.4 |
| 1990 | 5 | 100 | 5 | 4.0 | 3. | 5/4 | ✓ | 14.7 |
| Snow White | 4.5 | 92.5 | 4 | 3 | 3.5 | 5/3 | ✓ | 15.0 |
| G2542 | 4.5 | 86.25 | 5 | 4 | 4.0 | 5/4 | ✓ | 15.8 |
| Discovery | 4 | 91.25 | 4 | 4 | 5 | 5/3 | ✓ | 14.8 |
| Ar Kan | 3 | 95 | 3.25 | 3.75 | 3. | 5/3 | | 14.2 |
| G2500 | 5 | 88.75 | 5 | 5.0 | 4.5 | 5/5 | ✓ | 15.5 |

Winter Hardiness Notes taken 3/31/1992. following a hard March freeze after a very mild winter encouraged lush growth (ratings 1-5 with 5 best)

Growth Habit notes were taken in plots at Haven, Kansas where the varieties were grown side by side with the same treatment

P = Prostrate
SE = Semi erect
E = Erect

| | 1992 | 1991 | 1990 |
|---|---|---|---|
| GSR 2500 | SE | SE | SE |
| Snow White | SE | SE | SE |
| Haven | P | P | P |
| G2542 | P | P | P |



G2500

flag leaf

leaf below flag leaf

flag leaf

leaf below flag leaf

color - green

| 1991 | Grain % Protein | % P. Flour | Test Wt. | TKW | % EXT. Flour | Grain & Texture | Loaf Vol. |
|---|---|---|---|---|---|---|---|
| G2542 | 15.3 | 14.0 | 59.5 | 28.3 | 74.1 | O.K. | 1070 |
| Haven | 15.16 | 13.95 | 61.0 | 29.7 | 75.7 | OK | 1115 |
| G2500 | 13.97 | 12.78 | 61.0 | 34.1 | 66.0* | OK | 1125 |
| G1990 | 14.80 | 13.26 | 61.1 | 32.4 | 74.5 | OK | 1085 |
| G1323 (W) | 13.73 | 12.59 | 59.8 | 27.9 | 72.6 | " | 1055 |

| 1992 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Plainsman V | 14.1 | 13.3 | 57.3 | 23.6 | 70.3 | OK | 1040 |
| Snow white | 12.7 | 11.83 | 58.4 | 26.1 | 69.6 | OK | 900 |
| Haven | 13.6 | 12.7 | 59.8 | 26.8 | 71.2 | OK | 940 |
| G2500 | 13.2 | 11.7 | 61.3 | 32.3 | * | OK. | 910 |
| G1990 | 13.7 | 13.1 | 58.6 | 28 | 70.3 | OK. | 900 |

* Soft Red Winter - needs milled as Soft wheat

High Molecular weight glutenin subunits of G2500 are 1, 5, 7, 8, 10

1991 yields (ave. 3 reps)

| | | Bu/A. | Bearded | Brown chaff | Semidwarf |
|---|---|---|---|---|---|
| G2500 | SRW | 70.42 | ✓ | ✓ | ✓ |
| G2542 | HRW | 66.5 | ✓ | ✓ | ✓ |
| Haven | HRW | 66.9 | ✓ | ✓ | ✓ |
| G1990 | HRW | 60.65 | | ✓ | ✓ |
| G1323 | HWW | 65.45 | ✓ | ✓ | ✓ |

1992 yields (ave. 3 reps.)

| | | | | | |
|---|---|---|---|---|---|
| G2500 | SRW | 79.42 | ✓ | ✓ | ✓ |
| Haven | HRW | 58.67 | ✓ | ✓ | ✓ |
| Karl | HRW | 58.92 | ✓ | | ✓ |
| Cardinal | SRW | 56.83 | | | ✓ |
| Caldwell | SRW | 50.58 | | | ✓ |
| G2542 | HRW | 55.58 | ✓ | ✓ | ✓ |
| G1990 | HRW | 50.92 | | ✓ | ✓ |
| KS2163 | HRW | 52.0 | ✓ | | ✓ |

9400113 (14)

# 1993 GSR OBSERVATION PLOT
265 square feet unreplicated
Haven, Kansas

The observation plot was planted October 3, 1992 at 45# per acre planting rate. It was fertilized for production of 50 bushel yields at 15% protein.

| VARIETY | YIELD RANK | BU./ACRE | % PROTEIN (mfb) | %PROTEIN (12% moisture) | |
|---|---|---|---|---|---|
| GSR 2500 | 1 | 71.23 | 16.41 | 14.44 | |
| KS 2163 | 1 | 71.23 | 14.66 | 12.9 | check |
| G1816 | 3 | 68.49 | 15.49 | 13.63 | |
| G3003 | 4 | 65.75 | 15.59 | 13.72 | |
| G1720 | 4 | 65.75 | 16.41 | 14.44 | |
| Haven | 6 | 63.01 | 16.93 | 14.9 | |
| G1891 | 6 | 63.01 | 14.97 | 13.17 | |
| G2160 | 6 | 63.01 | 15.84 | 13.94 | |
| Snow White (e) | 6 | 63.01 | 15.75 | 13.86 | |
| G2012 (e) | 6 | 63.01 | 15.44 | 13.59 | |
| G1878 | 6 | 63.01 | 14.84 | 13.06 | |
| G3006 | 6 | 63.01 | 14.75 | 12.98 | |
| G2164 | 6 | 63.01 | 14.90 | 13.12 | |
| G3010 | 6 | 63.01 | 16.22 | 14.27 | |
| G3011 | 6 | 63.01 | 16.61 | 14.62 | |
| G1594 | 16 | 60.27 | 15.06 | 13.25 | |
| AgSeCo 7853 | 16 | 60.27 | 15.31 | 13.47 | check |
| Karl | 16 | 60.27 | 15.86 | 13.96 | check |
| G2028 (e) | 16 | 60.27 | 17.51 | 15.41 | |
| G2015 (e) | 16 | 60.27 | 16.01 | 14.09 | |
| G3009 | 16 | 60.27 | 16.32 | 14.36 | |
| G1093 | 16 | 60.27 | 16.19 | 14.25 | |
| G62 | 16 | 60.27 | 16.84 | 14.82 | |
| G2044 (e) | 24 | 57.53 | 15.24 | 13.41 | |
| G2027 (e) | 24 | 57.53 | 15.80 | 13.90 | |
| G2007 (e) | 24 | 57.53 | 15.81 | 13.91 | |
| G2035 (e) | 24 | 57.53 | 16.38 | 14.41 | |
| G1760 | 24 | 57.53 | 17.60 | 15.49 | |
| G1113 | 29 | 54.79 | 16.61 | 14.62 | |
| G2140 | 29 | 54.79 | 15.74 | 13.85 | |
| G2038 | 29 | 54.79 | 16.45 | 14.48 | |
| G2142 | 29 | 54.79 | 17.36 | 15.28 | |
| Advantage | 29 | 54.79 | 16.84 | 14.82 | |
| Victory | 29 | 54.79 | 15.00 | 13.2 | check |
| G1782 | 29 | 54.79 | 17.58 | 15.47 | |
| G1785 | 29 | 54.79 | 16.59 | 14.6 | |
| G2542 | 29 | 54.79 | 17.36 | 15.28 | |
| G3013 | 29 | 54.79 | 16.13 | 14.19 | |
| G1781 | 29 | 54.79 | 17.4 | 15.31 | |
| G1009 | 29 | 54.79 | 16.58 | 14.59 | |
| G2110 | 29 | 54.79 | 17.52 | 15.42 | |
| G1783 | 29 | 54.79 | 16.7 | 14.7 | |

32 others were below 54 bushels per acre in yield. The lowest yield was 43.83 bushels per acre. G1759 had 16.37% protein. (18.6 % mfb)

## Table 12. Disease ratings from 1993 Kansas Winter Wheat Performance Tests 1/

| Entrant or brand | Variety or hybrid | Green Leaf Area RL 6/9 | Green Leaf Area RL 6/9 | Green Leaf Area Fl 6/11 | Stem Rust BR 6/25 | Stem Rust RL 6/20 | Stem Rust LB 6/16 | Planted Seed T.K.W. (grams) | Planted Seed Test Weight (lb/bu) | Planted Seed Seeds /lb (1000) | Col. Len. (in.) 2/ | Hess. Fly 3/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AgriPro | Laredo | 4 | -- | 5 | -- | 1 | -- | 39 | 60 | 12 | 3.3 | 8 |
| AgriPro | Longhorn | 4 | -- | 3 | -- | 2 | -- | 42 | 61 | 11 | 4.7 | 8 |
| AgriPro | Ogallala | 5 | 6 | 6 | -- | 2 | -- | 38 | 61 | 12 | 3.5 | 8 |
| AgriPro | Pecos | 6 | -- | 7 | -- | 4 | 2 | 30 | 61 | 15 | 3.0 | 1 |
| AgriPro | Ponderosa | 4 | -- | 5 | 3 | 2 | 2 | 48 | 62 | 9 | 3.1 | 8 |
| AgriPro | Sierra | -- | -- | 3 | -- | -- | -- | 35 | -- | 13 | 3.3 | 8 |
| AgriPro | Tomahawk | 4 | 7 | 4 | 3 | 4 | 2 | 38 | 57 | 12 | 3.5 | 8 |
| AgriPro | (S) Sawyer | 6 | 6 | -- | 8 | 8 | -- | 33 | 58 | 14 | 2.9 | 1 |
| AGSECO | 7805 | 8 | -- | -- | -- | 2 | -- | 31 | 55 | 15 | 3.8 | 8 |
| AGSECO | 7833 | 7 | -- | -- | -- | 1 | -- | 32 | 58 | 14 | 3.0 | 8 |
| AGSECO | 7846 | 6 | -- | -- | 3 | 2 | 1 | 25 | 61 | 18 | 3.0 | 8 |
| AGSECO | 7853 | 7 | 9 | 8 | 4 | 5 | 3 | 36 | 58 | 13 | 3.0 | 8 |
| AGSECO | 9001 Exp | 8 | -- | -- | -- | 3 | -- | 39 | 57 | 12 | 3.0 | 8 |
| AGSECO | Colby | 5 | -- | -- | -- | 2 | -- | 30 | 56 | 15 | 3.0 | 8 |
| AWWPA | (W) Rio Blanco | 8 | -- | 9 | -- | 2 | -- | 28 | 58 | 16 | 3.3 | 8 |
| AWWPA | (W)KS84HW196Exp | 8 | -- | -- | -- | 2 | -- | 34 | 60 | 13 | 3.9 | 8 |
| Century II | Discovery | 6 | 8 | 7 | 2 | 3 | 2 | 32 | 58 | 14 | 3.3 | 8 |
| Century II | Voyager | 7 | 7 | 4 | 8 | 8 | 8 | 36 | 59 | 13 | 4.3 | 8 |
| Century II | (S) 2500 Exp | 4 | -- | -- | 5 | 3 | 2 | 37 | 59 | 12 | 3.5 | 8 |
| HybriTech | (S) EX 63 Exp | -- | -- | -- | 3 | -- | 2 | 38 | -- | 12 | 4.2 | 1 |
| HybriTech | (S) Pacer | -- | -- | -- | 9 | -- | 8 | 30 | -- | 15 | 3.3 | 1 |
| Ohlde | (S) T408 | 5 | 6 | -- | 2 | 3 | 1 | 26 | 52 | 18 | 2.9 | 1 |
| Ohlde | (S) T441 | 3 | 3 | -- | 9 | 8 | 8 | 27 | 56 | 17 | 3.0 | 1 |
| Ohlde | (S) T63 | 4 | 3 | -- | 8 | 9 | 5 | 31 | 55 | 15 | 3.0 | 1 |
| Pioneer | (S) 2545 | 5 | -- | -- | 6 | 6 | 4 | 38 | -- | 12 | 3.4 | 1 |
| Pioneer | (S) 2548 | 3 | -- | -- | 5 | 3 | 1 | 34 | -- | 13 | 3.5 | 8 |
| Quantum | 549 | -- | -- | -- | -- | -- | -- | 33 | -- | 14 | 3.5 | 8 |
| Quantum | 562 | 6 | -- | -- | -- | 3 | -- | 29 | -- | 16 | 3.3 | 8 |
| Quantum | 575 | 5 | -- | -- | -- | 7 | 5 | 41 | 52 | 11 | 3.8 | 8 |
| Quantum | 577 | 5 | 5 | -- | 6 | 6 | 3 | 44 | 51 | 10 | 3.8 | 8 |
| Terra | HR 153 | 7 | -- | -- | 4 | 6 | 2 | 37 | 57 | 12 | 2.9 | 8 |
| Terra | (S) SR 204 | 6 | -- | -- | 9 | 7 | 7 | 29 | 56 | 16 | 3.0 | 1 |
| Trio | T13 | 8 | -- | -- | -- | 3 | -- | 25 | 51 | 18 | 3.7 | 8 |

## Table 12. Disease ratings from 1993 Kansas Winter Wheat Performance Tests 1/

| Entrant or brand | Variety or hybrid | Soilborne RL 4/18 | Soilborne SI 4/5 | SB/SS SI 4/15 | Spindle Streak SI 4/5 | Leaf Rust RL 6/9 | Leaf Rust RL 6/9 | Leaf Rust FR 6/3 | Leaf Rust HV 6/9 | Leaf Rust FI 6/11 | Speckled Leaf Blotch FR 6/3 | Speckled Leaf Blotch LB 5/28 | Speckled Leaf Blotch HV 6/9 | Tan Spot RL 6/9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AgriPro | Laredo | -- | -- | S | -- | 5 | -- | -- | -- | 2 | -- | -- | -- | -- |
| AgriPro | Longhorn | -- | -- | S | -- | 4 | -- | -- | -- | 2 | -- | -- | -- | -- |
| AgriPro | Ogallala | 2 | 1 | S | 4 | 5 | 3 | -- | 2 | 3 | -- | -- | 8 | 6 |
| AgriPro | Pecos | -- | 1 | R | 3 | 5 | -- | 5 | 5 | 7 | 5 | 6 | 7 | -- |
| AgriPro | Ponderosa | -- | -- | R | -- | 3 | -- | 3 | -- | 2 | 7 | 8 | -- | -- |
| AgriPro | Sierra | -- | 1 | S | 8 | -- | -- | -- | -- | 3 | -- | -- | -- | -- |
| AgriPro | Tomahawk | 1 | 1 | R | 5 | 4 | 3 | 1 | 3 | 2 | 7 | 8 | 8 | 6 |
| AgriPro | (S) Sawyer | 1 | -- | R | -- | 6 | 6 | -- | -- | -- | -- | -- | -- | 5 |
| AGSECO | 7805 | -- | -- | MR | -- | 7 | -- | -- | -- | -- | -- | -- | -- | -- |
| AGSECO | 7833 | -- | -- | MS | -- | 6 | -- | -- | -- | -- | -- | -- | -- | -- |
| AGSECO | 7846 | -- | -- | R | -- | 8 | -- | 9 | -- | -- | 5 | 4 | -- | -- |
| AGSECO | 7853 | 1 | 1 | MR | 3 | 5 | 6 | 5 | 7 | 6 | 7 | 8 | 9 | 7 |
| AGSECO | 9001 Exp | -- | -- | R | -- | 6 | -- | -- | -- | -- | -- | -- | -- | -- |
| AGSECO | Colby | -- | -- | R | -- | 5 | -- | -- | -- | -- | -- | -- | -- | -- |
| AWWPA | (W) Rio Blanco | -- | -- | MR | -- | 8 | -- | -- | -- | 9 | -- | -- | -- | -- |
| AWWPA | (W)KS84HW196Exp | -- | -- | S | -- | 8 | -- | -- | -- | -- | -- | -- | -- | -- |
| Century II | Discovery | 6 | 6 | MR | 3 | 4 | 4 | 3 | 5 | 3 | 5 | 6 | -- | 8 |
| Century II | Voyager | 5 | 8 | MS | -- | 8 | 8 | 4 | 7 | 7 | 3 | 4 | 7 | 6 |
| Century II | (S) 2500 Exp | -- | -- | R | -- | 1 | -- | 1 | -- | -- | 4 | 3 | -- | -- |
| HybriTech | (S) EX 63 Exp | -- | -- | -- | -- | -- | -- | 3 | -- | -- | 4 | 4 | -- | -- |
| HybriTech | (S) Pacer | -- | -- | -- | -- | -- | -- | 5 | -- | -- | 4 | 4 | -- | -- |
| Ohlde | (S) T408 | 2 | -- | MS | -- | 1 | 2 | 3 | -- | -- | 5 | 7 | -- | 5 |
| Ohlde | (S) T441 | 1 | -- | R | -- | 3 | 3 | 3 | -- | -- | 3 | 4 | -- | 4 |
| Ohlde | (S) T63 | 4 | -- | MS | -- | 2 | 2 | 1 | -- | -- | 5 | 6 | -- | 4 |
| Pioneer | (S) 2545 | -- | -- | R | -- | 6 | -- | 6 | -- | -- | 2 | 2 | -- | -- |
| Pioneer | (S) 2548 | -- | -- | S | -- | 3 | -- | 3 | -- | -- | 4 | 6 | -- | -- |
| Quantum | 549 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quantum | 562 | -- | -- | R | -- | 5 | -- | -- | -- | -- | -- | -- | -- | -- |
| Quantum | 575 | -- | 1 | R | 5 | 5 | -- | 2 | 3 | -- | 4 | 6 | 6 | -- |
| Quantum | 577 | 4 | 4 | MR | 7 | 4 | 3 | 1 | 4 | -- | 5 | 5 | 5 | 6 |
| Terra | HR 153 | -- | 1 | R | 3 | 5 | -- | 5 | 7 | -- | 7 | 9 | 8 | -- |
| Terra | (S) SR 204 | -- | 1 | R | 5 | 5 | -- | 3 | 6 | -- | 4 | 5 | 3 | -- |
| Trio | T13 | -- | -- | S | -- | 7 | -- | -- | -- | -- | -- | -- | -- | -- |

## Table 11. Lodging and shattering percentages, continued

| Brand | Cultivar | Lodging Irrigated SI | TI | GI | Shattering BR | EL | TD | TI |
|---|---|---|---|---|---|---|---|---|
| AgriPro | Laredo | --- | 20 | 0 | --- | 1 | 60 | 60 |
| AgriPro | Longhorn | --- | 35 | 0 | --- | 1 | 60 | 70 |
| AgriPro | Ogallala | --- | 30 | 0 | --- | 10 | 80 | 90 |
| AgriPro | Pecos | 6 | 18 | 0 | --- | --- | --- | 70 |
| AgriPro | Ponderosa | 5 | 23 | 0 | 9 | 5 | 90 | 90 |
| AgriPro | Sierra | 0 | 18 | 1 | --- | --- | --- | 60 |
| AgriPro | Tomahawk | 11 | 50 | 0 | 7 | 1 | 80 | 70 |
| AGSECO | 7805 | --- | --- | --- | --- | 1 | 50 | --- |
| AGSECO | 7833 | --- | 33 | 0 | --- | 1 | 40 | 60 |
| AGSECO | 7846 | --- | --- | 5 | 3 | --- | --- | --- |
| AGSECO | 7853 | 5 | 33 | 0 | 5 | 2 | 70 | 60 |
| AGSECO | 9001 Exp | --- | --- | --- | --- | 1 | 60 | --- |
| AGSECO | Colby | --- | --- | --- | --- | 1 | 50 | --- |
| AWWPA | (W) Rio Blanco | 5 | 30 | 0 | --- | 1 | 50 | 50 |
| AWWPA | (W)KS84HW196Exp | --- | 58 | --- | --- | --- | 30 | 40 |
| Century II | Discovery | 24 | 63 | 0 | 6 | 5 | 70 | 80 |
| Century II | Voyager | 25 | 58 | 0 | 5 | 1 | 20 | 30 |
| Century II | (S) 2500 Exp | --- | --- | --- | 6 | --- | --- | --- |
| HybriTech | (S) EX 63 Exp | --- | --- | --- | 6 | --- | --- | --- |
| HybriTech | (S) Pacer | --- | --- | --- | 5 | --- | --- | --- |
| Ohlde | (S) T408 | --- | --- | --- | 12 | --- | --- | --- |
| Ohlde | (S) T441 | --- | --- | --- | 10 | --- | --- | --- |
| Ohlde | (S) T63 | --- | --- | --- | 7 | --- | --- | --- |
| Pioneer | (S) 2545 | --- | --- | --- | 8 | --- | --- | --- |
| Pioneer | (S) 2548 | --- | --- | --- | 8 | --- | --- | --- |
| Quantum | 549 | --- | --- | --- | --- | --- | 40 | --- |
| Quantum | 562 | --- | --- | --- | --- | --- | 50 | --- |
| Quantum | 575 | 3 | --- | --- | --- | --- | --- | --- |
| Quantum | 577 | 8 | --- | --- | 5 | 2 | --- | --- |
| Terra | HR 153 | 9 | --- | --- | 9 | --- | --- | --- |
| Terra | (S) SR 204 | 3 | --- | --- | 8 | --- | --- | --- |
| Trio | T13 | --- | 55 | --- | --- | --- | 50 | 50 |
| ---- | 2163 | 0 | 20 | 0 | 7 | 2 | 80 | 80 |
| ---- | 2172 | 1 | --- | --- | --- | --- | --- | --- |
| ---- | 2180 | 0 | --- | 0 | --- | --- | --- | --- |
| ---- | Arapahoe | --- | --- | --- | 4 | 1 | 50 | --- |
| ---- | Arkan | 1 | --- | --- | 4 | 2 | --- | --- |
| ---- | Chisholm | --- | --- | --- | 6 | --- | --- | --- |
| ---- | Cimarron | 10 | 35 | 8 | 4 | 1 | 40 | 50 |
| ---- | Ike (KS89H48) | 4 | 40 | 10 | 4 | 1 | 30 | 60 |
| ---- | Jules | 6 | 30 | 1 | --- | --- | 20 | 30 |
| ---- | Karl | 5 | 43 | 0 | 4 | 1 | 50 | 50 |
| ---- | Karl 92 | 0 | 38 | 0 | 3 | 1 | 50 | 50 |
| ---- | Larned | --- | --- | --- | 3 | 1 | 40 | --- |
| ---- | Newton | 13 | 50 | 1 | 5 | 1 | 50 | 50 |
| ---- | Rawhide | 15 | 38 | 1 | 3 | 5 | 80 | 80 |
| ---- | Scout 66 | --- | --- | --- | 6 | 1 | 40 | --- |
| ---- | TAM 107 | 39 | 70 | 0 | 5 | 1 | 40 | 40 |
| ---- | TAM 108 | 23 | --- | --- | --- | --- | --- | --- |
| ---- | TAM 200 | 25 | 48 | 0 | 5 | 1 | 40 | 60 |
| ---- | Vista | --- | --- | --- | 4 | --- | --- | --- |
| ---- | (S) Caldwell | --- | --- | --- | 9 | --- | --- | --- |
| ---- | (S) Cardinal | --- | --- | --- | 10 | --- | --- | --- |
| ---- | (S) Clark | --- | --- | --- | 15 | --- | --- | --- |
| ---- | (S) Freedom | --- | --- | --- | 12 | --- | --- | --- |
| ---- | Triumph 64 | --- | --- | --- | --- | 0 | --- | --- |
| ---- | Vista | --- | --- | --- | --- | 1 | 40 | --- |
| ---- | Yuma | --- | 40 | 0 | --- | 1 | 80 | 70 |
| ---- | (W) Arlin | 25 | 38 | 0 | 7 | 1 | 60 | 60 |
| Test Averages, % | | 10 | 39 | 1 | 6 | 2 | 50 | 60 |
| L.S.D. (.05) | ** | 10 | 18 | NS | 5 | NS | 10 | 20 |

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

## Table 10. Plant heights (inches) 1993 Kansas Winter Wheat Performance Tests

| | | East | | | 3-Sta. | Central | | | | | 5-Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Brand | Cultivar | BR | FR | LB | Avg. | RP | HV | RN | SD | SU | Avg. |
| AgriPro | Pecos | --- | 33 | 30 | --- | --- | 33 | 34 | --- | 31 | --- |
| AgriPro | Ponderosa | 28 | 36 | 35 | 33 | 37 | 36 | 41 | 35 | 32 | 36 |
| AgriPro | Sierra | --- | --- | --- | --- | --- | --- | 38 | --- | --- | --- |
| AgriPro | Tomahawk | 30 | 36 | 34 | 33 | 38 | 37 | 41 | 35 | 33 | 37 |
| AGSECO | 7846 | 29 | 38 | 35 | 34 | --- | --- | --- | --- | --- | --- |
| AGSECO | 7853 | 30 | 38 | 35 | 34 | 39 | 37 | 40 | 35 | 36 | 37 |
| AGSECO | Colby | --- | --- | --- | --- | 41 | --- | 46 | --- | --- | --- |
| AWWPA | (W) Rio Blanco | --- | --- | --- | --- | --- | --- | --- | 32 | --- | --- |
| Century II | Discovery | 27 | 35 | 35 | 32 | 36 | 36 | 39 | 36 | 34 | 36 |
| Century II | Voyager | 33 | 41 | 40 | 38 | 40 | 42 | 41 | 41 | 37 | 40 |
| Century II | (S) 2500 Exp | 28 | 35 | 33 | 32 | --- | --- | --- | --- | --- | --- |
| HybriTech | (S) EX 63 Exp | 31 | 39 | 35 | 35 | --- | --- | --- | --- | --- | --- |
| HybriTech | (S) Pacer | 30 | 37 | 37 | 35 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T408 | 31 | 36 | 36 | 34 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T441 | 30 | 37 | 36 | 34 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T63 | 28 | 32 | 32 | 31 | --- | --- | --- | --- | --- | --- |
| Pioneer | (S) 2545 | 32 | 37 | 34 | 34 | --- | --- | --- | --- | --- | --- |
| Pioneer | (S) 2548 | 27 | 37 | 36 | 33 | --- | --- | --- | --- | --- | --- |
| Quantum | 549 | --- | --- | --- | --- | 38 | --- | --- | --- | --- | --- |
| Quantum | 575 | --- | 42 | 38 | --- | --- | 40 | 44 | 40 | 37 | --- |
| Quantum | 577 | 29 | 40 | 37 | 35 | 38 | 39 | 42 | 38 | 36 | 39 |
| Terra | HR 153 | 29 | 38 | 36 | 34 | --- | 37 | 40 | --- | --- | --- |
| Terra | (S) SR 204 | 30 | 37 | 37 | 35 | --- | 39 | 41 | --- | --- | --- |
| ---- | 2163 | 29 | 34 | 35 | 33 | 36 | 37 | 37 | 33 | 34 | 35 |
| ---- | 2172 | --- | --- | --- | --- | --- | 34 | 37 | 33 | 31 | --- |
| ---- | 2180 | --- | 31 | 32 | --- | 32 | 33 | 36 | 30 | 31 | 32 |
| ---- | Arapahoe | 28 | --- | --- | --- | 41 | --- | --- | 37 | 39 | --- |
| ---- | Arkan | 29 | 39 | 38 | 35 | 38 | 38 | 41 | 36 | 33 | 37 |
| ---- | Chisholm | 26 | 38 | 35 | 33 | --- | --- | --- | 35 | 34 | --- |
| ---- | Cimarron | 28 | 38 | 36 | 34 | 35 | 37 | 41 | 34 | 33 | 36 |
| ---- | Ike (KS89H48) | 29 | 39 | 36 | 35 | 37 | 40 | 41 | 35 | 37 | 38 |
| ---- | Karl | 29 | 36 | 35 | 33 | 35 | 37 | 38 | 37 | 33 | 36 |
| ---- | Karl 92 | 26 | 36 | 33 | 32 | 35 | 34 | 37 | 35 | 32 | 35 |
| ---- | Larned | 27 | 47 | 44 | 39 | 40 | 45 | 46 | 43 | 41 | 43 |
| ---- | Newton | 31 | 38 | 37 | 35 | 38 | 41 | 41 | 37 | 37 | 39 |
| ---- | Rawhide | 30 | 40 | 39 | 36 | 38 | 40 | 44 | 40 | 36 | 40 |
| ---- | Redland | --- | --- | --- | --- | 40 | --- | --- | --- | --- | --- |
| ---- | Scout 66 | 33 | 48 | 46 | 42 | 43 | 45 | 47 | 46 | 42 | 45 |
| ---- | TAM 107 | 28 | 37 | 35 | 33 | 34 | 36 | 40 | 35 | 32 | 35 |
| ---- | TAM 108 | --- | --- | --- | --- | --- | --- | --- | 37 | --- | --- |
| ---- | TAM 200 | 29 | 36 | 34 | 33 | 34 | 36 | 37 | 34 | 32 | 35 |
| ---- | Triumph 64 | --- | 44 | --- | --- | --- | 41 | 40 | 42 | 37 | --- |
| ---- | Vista | 26 | --- | --- | --- | 32 | --- | --- | 33 | 34 | --- |
| ---- | Yuma | --- | --- | --- | --- | 36 | --- | --- | --- | --- | --- |
| ---- | (S) Caldwell | 31 | 38 | 36 | 35 | 40 | --- | --- | --- | --- | --- |
| ---- | (S) Cardinal | 28 | 39 | 38 | 35 | 40 | --- | --- | --- | --- | --- |
| ---- | (S) Clark | 33 | 35 | 34 | 34 | 38 | --- | --- | --- | --- | --- |
| ---- | (S) Freedom | 28 | 37 | 37 | 34 | 40 | --- | --- | --- | --- | --- |
| ---- | (W) Arlin | 27 | 34 | 35 | 32 | 35 | 33 | 37 | 32 | 32 | 34 |
| Test Averages, inches | | 29 | 38 | 36 | --- | 37 | 38 | 40 | 36 | 35 | --- |
| L.S.D. (.05) ** | | 2.3 | 2.0 | 1.9 | --- | 0.7 | 1.0 | 2.4 | 2.3 | 2.3 | --- |

* Upper L.S.D. group. Differences among those values marked with an asterisk at any one location are not statistically significant.

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

## Table 9. Maturity (days earlier or later than a standard variety), 1993 Performance Tests

| | | East | | | 3-Sta. | Central | | | | 4-Sta. |
|---|---|---|---|---|---|---|---|---|---|---|
| Brand | Cultivar | BR | FR | LB | Avg. | RP | HV | RN | SD | Avg. |
| AgriPro | Pecos | --- | -6.3 | -8.0 | --- | --- | -6.8 | -5.0 | --- | --- |
| AgriPro | Ponderosa | -0.5 | -1.0 | -2.5 | -1.3 | -4.8 | -3.0 | -1.5 | -1.3 | -2.7 |
| AgriPro | Sierra | --- | --- | --- | --- | --- | --- | -0.3 | --- | --- |
| AgriPro | Tomahawk | -0.8 | -0.3 | 0.5 | -0.2 | -5.3 | -2.5 | 0.0 | -1.0 | -2.2 |
| AGSECO | 7846 | -3.0 | -3.0 | -4.0 | -3.3 | --- | --- | --- | --- | --- |
| AGSECO | 7853 | -4.8 | -4.5 | -4.0 | -4.4 | -6.5 | -4.8 | -4.8 | -5.0 | -5.3 |
| AGSECO | Colby | --- | --- | --- | --- | -1.8 | --- | -0.8 | --- | --- |
| AWWPA | (W) Rio Blanco | --- | --- | --- | --- | --- | --- | --- | -1.0 | --- |
| Century II | Discovery | -1.8 | -4.3 | -3.0 | -3.0 | -2.3 | -4.0 | -4.0 | -0.3 | -2.7 |
| Century II | Voyager | -1.3 | -0.8 | 0.5 | -0.5 | -1.3 | -0.3 | -0.8 | 1.0 | -0.4 |
| Century II | (S) 2500 Exp | -1.5 | 0.3 | 0.5 | -0.2 | --- | --- | --- | --- | --- |
| HybriTech | (S) EX 63 Exp | -0.5 | 1.0 | 1.5 | 0.7 | --- | --- | --- | --- | --- |
| HybriTech | (S) Pacer | -1.5 | -2.3 | -2.0 | -1.9 | --- | --- | --- | --- | --- |
| Ohlde | (S) T408 | -5.0 | -4.8 | -5.0 | -4.9 | --- | --- | --- | --- | --- |
| Ohlde | (S) T441 | -1.3 | -1.0 | -1.5 | -1.3 | --- | --- | --- | --- | --- |
| Ohlde | (S) T63 | -4.5 | -3.3 | -5.5 | -4.4 | --- | --- | --- | --- | --- |
| Pioneer | (S) 2545 | -3.3 | -1.0 | -1.0 | -1.8 | --- | --- | --- | --- | --- |
| Pioneer | (S) 2548 | -1.0 | -1.0 | -1.0 | -1.0 | --- | --- | --- | --- | --- |
| Quantum | 549 | --- | --- | --- | --- | -2.0 | --- | --- | --- | --- |
| Quantum | 575 | --- | -4.3 | -4.0 | --- | --- | -4.5 | -4.0 | -1.3 | --- |
| Quantum | 577 | -2.8 | -3.8 | -4.5 | -3.7 | -5.5 | -3.5 | -3.0 | -0.5 | -3.1 |
| Terra | HR 153 | -4.5 | -4.3 | -4.0 | -4.3 | --- | -4.5 | -4.0 | --- | --- |
| Terra | (S) SR 204 | -1.0 | -0.3 | -0.5 | -0.6 | --- | -1.0 | -1.5 | --- | --- |
| ---- | 2163 | -2.8 | -1.3 | -2.5 | -2.2 | -6.0 | -2.8 | -1.8 | -0.3 | -2.7 |
| ---- | 2172 | --- | --- | --- | --- | --- | -4.0 | -2.8 | -1.5 | --- |
| ---- | 2180 | --- | -7.3 | -7.0 | --- | -7.0 | -6.8 | -6.0 | -6.5 | -6.6 |
| ---- | Arapahoe | 2.0 | --- | --- | --- | -1.3 | --- | --- | 1.5 | --- |
| ---- | Arkan | -4.3 | -5.0 | -5.5 | -4.9 | -4.0 | -3.5 | -1.5 | -1.0 | -2.5 |
| ---- | Chisholm | -0.5 | -5.8 | -6.0 | -4.1 | --- | --- | --- | -1.8 | --- |
| ---- | Cimarron | -3.0 | -4.0 | -6.5 | -4.5 | -4.8 | -4.3 | -3.5 | -0.8 | -3.4 |
| ---- | Ike (KS89H48) | -0.5 | 0.0 | 0.5 | 0.0 | -4.3 | -1.5 | -0.8 | -0.5 | -1.8 |
| ---- | Karl | -5.5 | -5.3 | -6.5 | -5.8 | -7.5 | -4.5 | -5.5 | -1.3 | -4.7 |
| ---- | Karl 92 | -5.5 | -6.0 | -5.0 | -5.5 | -7.5 | -5.8 | -6.0 | -1.8 | -5.3 |
| ---- | Larned | 2.0 | 0.0 | -0.5 | 0.5 | -2.0 | 0.0 | 0.8 | -0.3 | -0.4 |
| ---- | Newton | -1.5 | -2.0 | -1.0 | -1.5 | -2.0 | -3.0 | -0.5 | -0.8 | -1.6 |
| ---- | Rawhide | -1.0 | -0.8 | -0.5 | -0.8 | -3.8 | -2.5 | -1.5 | 0.0 | -2.0 |
| ---- | Redland | --- | --- | --- | --- | -1.3 | --- | --- | --- | --- |
| ---- | Scout 66 | 6/1 | 5/22 | 5/14 | 0.0 | 5/29 | 5/21 | 5/23 | 5/17 | 5/23 |
| ---- | TAM 107 | -4.0 | -7.0 | -7.5 | -6.2 | -8.3 | -5.8 | -6.0 | -2.5 | -5.7 |
| ---- | TAM 108 | --- | --- | --- | --- | --- | --- | --- | 0.3 | --- |
| ---- | TAM 200 | 0.0 | -2.5 | -3.0 | -1.8 | -8.3 | -3.5 | -2.0 | -0.3 | -3.5 |
| ---- | Triumph 64 | --- | -5.8 | --- | --- | --- | -4.5 | -4.0 | -2.0 | --- |
| ---- | Vista | 1.5 | --- | --- | --- | -1.3 | --- | --- | 0.0 | --- |
| ---- | Yuma | --- | --- | --- | --- | -2.3 | --- | --- | --- | --- |
| ---- | (S) Caldwell | 0.0 | -1.8 | -0.5 | -0.8 | -6.5 | --- | --- | --- | --- |
| ---- | (S) Cardinal | 2.8 | 1.3 | 2.0 | 2.0 | -1.8 | --- | --- | --- | --- |
| ---- | (S) Clark | -5.5 | -4.8 | -6.0 | -5.4 | -6.8 | --- | --- | --- | --- |
| ---- | (S) Freedom | 2.0 | 0.3 | 0.0 | 0.8 | -1.0 | --- | --- | --- | --- |
| ---- | (W) Arlin | -5.5 | -7.8 | -8.0 | -7.1 | -6.3 | -6.8 | -6.5 | -6.0 | -6.4 |
| Test Averages, days | | -1.9 | -2.8 | -2.9 | --- | -4.1 | -3.6 | -2.8 | -1.2 | --- |
| L.S.D. (.05) ** | | 1.8 | 1.1 | 2.0 | --- | 0.6 | 0.6 | 1.2 | 1.0 | --- |

* Upper L.S.D. group. Differences among those values marked with an asterisk at any one location are not statistically significant.

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

## Table 10. Plant heights (inches) 1993 Kansas Winter Wheat Performance Tests

| Brand | Cultivar | East BR | East FR | East LB | 3-Sta. Avg. | Central RP | Central HV | Central RN | Central SD | Central SU | 5-Sta. Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AgriPro | Pecos | --- | 33 | 30 | --- | --- | 33 | 34 | --- | 31 | --- |
| AgriPro | Ponderosa | 28 | 36 | 35 | 33 | 37 | 36 | 41 | 35 | 32 | 36 |
| AgriPro | Sierra | --- | --- | --- | --- | --- | --- | 38 | --- | --- | --- |
| AgriPro | Tomahawk | 30 | 36 | 34 | 33 | 38 | 37 | 41 | 35 | 33 | 37 |
| AGSECO | 7846 | 29 | 38 | 35 | 34 | --- | --- | --- | --- | --- | --- |
| AGSECO | 7853 | 30 | 38 | 35 | 34 | 39 | 37 | 40 | 35 | 36 | 37 |
| AGSECO | Colby | --- | --- | --- | --- | 41 | --- | 46 | --- | --- | --- |
| AWWPA | (W) Rio Blanco | --- | --- | --- | --- | --- | --- | --- | 32 | --- | --- |
| Century II | Discovery | 27 | 35 | 35 | 32 | 36 | 36 | 39 | 36 | 34 | 36 |
| Century II | Voyager | 33 | 41 | 40 | 38 | 40 | 42 | 41 | 41 | 37 | 40 |
| Century II | (S) 2500 Exp | 28 | 35 | 33 | 32 | --- | --- | --- | --- | --- | --- |
| HybriTech | (S) EX 63 Exp | 31 | 39 | 35 | 35 | --- | --- | --- | --- | --- | --- |
| HybriTech | (S) Pacer | 30 | 37 | 37 | 35 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T408 | 31 | 36 | 36 | 34 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T441 | 30 | 37 | 36 | 34 | --- | --- | --- | --- | --- | --- |
| Ohlde | (S) T63 | 28 | 32 | 32 | 31 | --- | --- | --- | --- | --- | --- |
| Pioneer | (S) 2545 | 32 | 37 | 34 | 34 | --- | --- | --- | --- | --- | --- |
| Pioneer | (S) 2548 | 27 | 37 | 36 | 33 | --- | --- | --- | --- | --- | --- |
| Quantum | 549 | --- | --- | --- | --- | 38 | --- | --- | --- | --- | --- |
| Quantum | 575 | --- | 42 | 38 | --- | --- | 40 | 44 | 40 | 37 | --- |
| Quantum | 577 | 29 | 40 | 37 | 35 | 38 | 39 | 42 | 38 | 36 | 39 |
| Terra | HR 153 | 29 | 38 | 36 | 34 | --- | 37 | 40 | --- | --- | --- |
| Terra | (S) SR 204 | 30 | 37 | 37 | 35 | --- | 39 | 41 | --- | --- | --- |
| ---- | 2163 | 29 | 34 | 35 | 33 | 36 | 37 | 37 | 33 | 34 | 35 |
| ---- | 2172 | --- | --- | --- | --- | --- | 34 | 37 | 33 | 31 | --- |
| ---- | 2180 | --- | 31 | 32 | --- | 32 | 33 | 36 | 30 | 31 | 32 |
| ---- | Arapahoe | 28 | --- | --- | --- | 41 | --- | --- | 37 | 39 | --- |
| ---- | Arkan | 29 | 39 | 38 | 35 | 38 | 38 | 41 | 36 | 33 | 37 |
| ---- | Chisholm | 26 | 38 | 35 | 33 | --- | --- | --- | 35 | 34 | --- |
| ---- | Cimarron | 28 | 38 | 36 | 34 | 35 | 37 | 41 | 34 | 33 | 36 |
| ---- | Ike (KS89H48) | 29 | 39 | 36 | 35 | 37 | 40 | 41 | 35 | 37 | 38 |
| ---- | Karl | 29 | 36 | 35 | 33 | 35 | 37 | 38 | 37 | 33 | 36 |
| ---- | Karl 92 | 26 | 36 | 33 | 32 | 35 | 34 | 37 | 35 | 32 | 35 |
| ---- | Larned | 27 | 47 | 44 | 39 | 40 | 45 | 46 | 43 | 41 | 43 |
| ---- | Newton | 31 | 38 | 37 | 35 | 38 | 41 | 41 | 37 | 37 | 39 |
| ---- | Rawhide | 30 | 40 | 39 | 36 | 38 | 40 | 44 | 40 | 36 | 40 |
| ---- | Redland | --- | --- | --- | --- | 40 | --- | --- | --- | --- | --- |
| ---- | Scout 66 | 33 | 48 | 46 | 42 | 43 | 45 | 47 | 46 | 42 | 45 |
| ---- | TAM 107 | 28 | 37 | 35 | 33 | 34 | 36 | 40 | 35 | 32 | 35 |
| ---- | TAM 108 | --- | --- | --- | --- | --- | --- | --- | 37 | --- | --- |
| ---- | TAM 200 | 29 | 36 | 34 | 33 | 34 | 36 | 37 | 34 | 32 | 35 |
| ---- | Triumph 64 | --- | 44 | --- | --- | --- | 41 | 40 | 42 | 37 | --- |
| ---- | Vista | 26 | --- | --- | --- | 32 | --- | --- | 33 | 34 | --- |
| ---- | Yuma | --- | --- | --- | --- | 36 | --- | --- | --- | --- | --- |
| ---- | (S) Caldwell | 31 | 38 | 36 | 35 | 40 | --- | --- | --- | --- | --- |
| ---- | (S) Cardinal | 28 | 39 | 38 | 35 | 40 | --- | --- | --- | --- | --- |
| ---- | (S) Clark | 33 | 35 | 34 | 34 | 38 | --- | --- | --- | --- | --- |
| ---- | (S) Freedom | 28 | 37 | 37 | 34 | 40 | --- | --- | --- | --- | --- |
| ---- | (W) Arlin | 27 | 34 | 35 | 32 | 35 | 33 | 37 | 32 | 32 | 34 |
| Test Averages, inches | | 29 | 38 | 36 | --- | 37 | 38 | 40 | 36 | 35 | --- |
| L.S.D. (.05) | ** | 2.3 | 2.0 | 1.9 | --- | 0.7 | 1.0 | 2.4 | 2.3 | 2.3 | --- |

* Upper L.S.D. group. Differences among those values marked with an asterisk at any one location are not statistically significant.

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.